Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Pre-Laboratory:*** *Complete the concept map (flow chart) for* ***Part A:*** *Locating Reference*

*Positions for a Converging Lens,* ***Part B:*** *Locating Images in a Converging*

*Lens, and* ***Part C:*** *Locating Images in a Diverging Lens.*

***Purpose:***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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***Predictions:*** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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***Equipment & Materials:***

* Converging lens with support.
* Diverging lens.
* Meter Stick with two supports.
* Candle with holder.
* Paper screen and holder.
* Second sheet of paper or a small piece of cardboard.
* Chalk that can be easily erased.

*For set up of materials, please refer to pg. 555 Figure 1.*

***Observations***

Table 1: Image Characteristics in Converging Lenses

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Object Location** | **Size of Image** | **Attitude of Image** | **Location of Image** | **Type of Image** |
| Beyond 2F′ |  |  |  |  |
| At 2F′ |  |  |  |  |
| Between  2F′ and F′ |  |  |  |  |
| At F′ |  |  |  |  |
| Inside F′ |  |  |  |  |

Move the candle back to its original position beyond 2F′. Now cover half of the lens with the second piece of paper or cardboard. Locate and describe the image.

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Move the second piece of paper or cardboard to cover half of the flame. Locate and describe the image.

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Look through the diverging lens until you locate the image. Describe its characteristics (S.A.L.T). Is there any change when you move the candle back and forth? Describe your observations. Is there any image produced on the sheet of paper?

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***Source(s)of Error***:

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***Conclusions:***

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***Analyze and Evaluate***

1. What happened to the size of the real image as the object was slowly moved toward the lens

from its original position beyond 2F′.

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2. Why were you still able to see the object when half of the lens was covered? Why was the

brightness of the image reduced?

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***Apply and Extend***

3. List some optical devices that use a lens to produce a real image.

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4. Name an optical device that uses a lens to produce a larger, virtual image.

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